

## **Study guide for chapter 18: Recombinant DNA and biotechnology**

This chapter describes gene splicing as a collection of methods that can be used to transfer genes between different organisms. It is extremely important to understand that these methods, and in fact the whole of biotechnology is based on the principles governing biology. The central dogma and the genetic code predict that gene splicing is possible – the rest is just a description of the “toolbox”

The chapter describes the traditional methods for cloning genes and transferring them to cells. It should be emphasized that the majority of genes nowadays are isolated using PCR (Chapter 13) because many genomes of interest are completely sequenced.

The last part of the chapter describes a series of applications of these methods and some of the special techniques required. These are good illustrations but need not be remembered in detail.

### **Most important:**

- The relationship between the molecular understanding of the cell and the development of gene-technological tools (from the central dogma to the tailored organism in industry or agriculture)
- Which biological components are used as tools (enzymes, cells, viruses, plasmids...)?
- What is cloning?
- What is selection and what is screening?
- What are the prerequisites for using PCR?
- Which challenges are involved in transferring eukaryotic genes to prokaryotic organisms?
- How are these biological barriers overcome?